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# RESEARCH

## Evaluation of a peer led parenting intervention for disruptive behaviour problems in children: community based randomised controlled trial

 OPEN ACCESS

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### Abstract

**Objective** To evaluate the effectiveness of a peer led parenting intervention delivered to socially disadvantaged families.

**Design** Randomised controlled trial.

**Setting** Schools and children's centres in a socially deprived borough of inner London.

**Participants** Parental caregivers seeking help with managing the problem behaviours of 116 index children, aged 2-11 years; 59 families were randomised to the intervention and 57 to a waitlist control condition.

**Intervention** Empowering parents, empowering communities is an eight week (two hours each week), manualised programme delivered to groups of parents by trained peer facilitators from the local community.

**Main outcome measures** Child problems (number and severity), parental stress, and parenting competencies were assessed before and after the intervention using standardised parent reported measures.

**Results** Significantly greater improvements in positive parenting practices and child problems were observed in the intervention group compared with the waitlist group, with no difference in parental stress between the groups. An intention to treat analysis for the primary outcome measure, the intensity subscale of the Eyberg child behaviour inventory, showed an intervention effect size of 0.38 (95% confidence interval 0.01 to 0.75, P=0.01). The intervention group had high rates of treatment retention (91.5%) and user satisfaction.

**Conclusion** The peer led parenting intervention significantly reduced child behaviour problems and improved parenting competencies. This is a promising method for providing effective and acceptable parenting support to families considered hard to reach by mainstream services.

**Trial registration** Current Controlled Trials ISRCTN01962337.

### Introduction

Effective parenting, characterised by consistent, supportive, and responsive childrearing practices, is critical to achieving positive

developmental outcomes for children.<sup>1</sup> Links between parenting styles and the causation, maintenance, and amelioration of mental health difficulties in young people, and disruptive behaviour in particular, have also been well established.<sup>2</sup> Disruptive behaviour, which includes aggression, non-compliance, and oppositionality, is the most common reason for referral to child mental health clinics in the United Kingdom and other developed countries, with the highest prevalence in inner city areas.<sup>3,4</sup> These challenging behaviours impact considerably on quality of life for the affected children and their families and are closely linked to academic failure, crime, unemployment, and other adverse long term outcomes, with high social and economic costs.<sup>5</sup> The provision of effective and accessible treatment programmes is therefore of major national and international importance.

Numerous clinical trials have shown that parenting interventions developed from social learning theory and relationship based approaches improve disruptive behaviour problems in children.<sup>6</sup> These interventions are consequently recommended for routine practice by the National Institute for Health and Clinical Excellence<sup>7</sup> (an independent body that provides national guidance on health interventions for England and Wales). However, many of the families who are most in need of treatment do not access appropriate care, either dropping out prematurely or failing to engage with services from the outset.<sup>8</sup> This may be due in part to logistical barriers, such as competing demands and difficulties with transportation, which are especially salient for highly stressed and isolated families living in areas of socioeconomic disadvantage.<sup>9</sup> Negative parental expectancies about treatment, including concerns about the cultural acceptability of conventional parenting interventions, may also hinder initial and subsequent engagement.<sup>10,11</sup>

The empowering parents, empowering communities programme was developed with such hard to reach families in mind.

Drawing on a peer led service delivery model that has been successfully applied to several other health conditions and underserved populations,<sup>12 13 14</sup> the programme trains local parents as peer facilitators to deliver a manualised, group based parenting intervention in community settings. As well as showing high rates of user satisfaction, an uncontrolled pilot evaluation<sup>15</sup> found that attendance at the peer led parenting groups was associated with significant reductions in parent reported child behaviour problems.

We evaluated the clinical effectiveness and acceptability of the programme using a more rigorous randomised controlled trial methodology, applied to a population of families living in an economically deprived, inner city area. We tested the hypotheses that participation in the peer led parenting intervention would be associated with significant advantages over a waitlist control condition, in terms of improved child behaviour problems, increased use of positive parenting practices, and reduced parental stress.

## Methods

This multisite randomised controlled trial was designed in accordance with the consolidated standards of reporting trials guidelines.<sup>16</sup> We compared an intervention group with a waitlist control condition, using a 1:1 allocation ratio. Informed consent was obtained from all participants before data collection and randomisation.

## Study population

The trial took place between January and December 2010 at six sites (three schools, two children's centres/schools, and one church) across Southwark. This inner London borough is one of the most deprived local authorities in England, with a high proportion of residents from black and ethnic minority groups and more than double the national average rate of severe emotional and behavioural difficulties among youths.<sup>4</sup> Recruitment started immediately after ethical approval was obtained, and the trial was registered with Current Controlled Trials two weeks later owing to administrative delays.

Families were eligible for inclusion if a primary parental caregiver ("parent") had identified difficulties in managing the behaviour of an index child aged between 2 and 11 years, in the absence of serious neurodevelopmental problems. We excluded families from the study if the parent was unable to read and write in English, could not commit to weekly attendance at the parenting groups, and was not currently living at home with the index child. To increase accessibility of the programme, we set no specific inclusion or exclusion criteria for the type or severity of child problems, other than the fact that the parent was seeking help with managing difficult behaviours. In households with more than one child aged 2-11 years, we asked the parents to nominate an index child whose behaviour was of greatest concern.

Families were recruited through word of mouth, posters in schools and children's centres, professional referrals from social workers and schools, and face to face contacts by programme outreach workers. The families of 116 index children were eligible and consented to take part; 59 families were randomised to the intervention group and 57 to the waitlist control group. For five families both parents participated in the trial; in these instances we collected data from one self nominated parent (usually the mother). In all the other families, only one parent took part. Fifty four families were available for follow-up in the intervention group, and 50 were retained in the waitlist

control group. The 12 families that were lost to follow-up were included in an intention to treat analysis.

## The intervention

Pairs of trained peer facilitators delivered the programme (empowering parents, empowering communities) to groups of 7-14 parents over the course of eight weekly, two hour sessions. The parenting groups aimed to improve parent-child relationships and interactions, reduce behavioural problems in the child, and increase participants' confidence in their parenting abilities. The course was delivered according to a structured manual<sup>17</sup> and employed attachment, social learning, structural, relational, and cognitive behavioural theories and methods, consistent with national guidelines<sup>7</sup> for the treatment of disruptive behaviour in children (box). Intervention sessions involved sharing of information, group discussion, demonstration, role play, reflection, and planning/review of homework tasks.

A cohort of 12 peer facilitators was responsible for delivering six parenting groups in the pre-crossover phase of the trial. These peer facilitators were themselves parents from the local community who had successfully completed an accredited training programme that included workshops (totalling 60 hours), submission of a written portfolio, and a period of supervised practice.<sup>15</sup> Group facilitators received fortnightly supervision to enhance intervention fidelity, skill development, and personal support. Supervisors were also contactable by telephone to manage potential safeguarding issues—for example, recognition and reporting of abusive parenting practices.. The direct costs of running the programme (including facilitators' wages, travel expenses, printing of materials, accreditation, crèche workers, refreshments, and rental of a room) were about £2700 (€3249; \$4273) per group.

## Outcome measures

We assessed the outcomes for children and parents using a set of standardised, parent reported questionnaires, all of which had been extensively piloted with the target population and widely used in other parent training trials. The measures were administered to groups of parents at study sites one week before the start of the intervention and immediately after the final intervention session. We individually followed-up parents who were unable to attend the group data collection sessions.

### Primary outcome measure

The Eyberg child behaviour inventory<sup>18</sup> is a 36 item scale that assesses both the number of child disruptive behaviour problems (problems subscale) and the frequency with which these occur (intensity subscale). We selected the intensity subscale as the primary outcome for the study, given its excellent sensitivity (96%) and specificity (87%)<sup>19</sup> for detecting disruptive behaviour (relative to the structured interview for disruptive behaviour disorders of the *Diagnostic and Statistical Manual of Mental Disorders*, third edition, revised, DSM-III-R) and frequent use in previous trials of parenting interventions for disruptive behaviour in children.<sup>6</sup> The measure also has acceptable inter-rater reliability ( $\kappa$  0.61 to 0.79).<sup>20</sup>

### Secondary outcome measures

The concerns about my child<sup>21</sup> measure is a visual analogue scale that requires parents to nominate, prioritise, and rate up to three key concerns about their child. The same concerns that were nominated at baseline were re-rated at follow-up, providing a sensitive, individualised index of change. Given expected

**Outline of empowering parents, empowering communities programme***Session 1: being a parent*

"Good enough" versus "perfect" parent  
Taking care of ourselves

*Session 2: feelings, communication, and culture*

Remembering what it was like to be a child  
Acknowledging, accepting, and expressing feelings

*Session 3: play and listening*

Non-directive play ("special time")  
Practising listening

*Session 4: labels and praise*

Avoiding "labels" when describing behaviour  
Using descriptive praise to change behaviour

*Session 5: understanding children's behaviour*

Understanding children's behaviour in response to needs  
Discipline

*Session 6: setting boundaries*

Understanding boundaries  
Rewards  
Assertive versus aggressive behaviour  
Time out, challenging, and saying no

*Session 7: listening**Session 8: review and coping with stress*

variation in the type and number of nominated problems, we limited the analysis of severity ratings to specified "number one" concerns.

The strengths and difficulties questionnaire<sup>22</sup> is a 25 item screening measure used to obtain a more global assessment of child mental health problems. It produces a total difficulties score and four problem subscale scores (emotional problems, conduct problems, hyperactivity/inattention, peer relationship problems), with higher scores indicating more dysfunction.

The Arnold-O'Leary parenting scale<sup>23</sup> is a 30 item scale that assesses parenting competencies, providing a total score and three subscales (laxness, over-reactivity, and verbosity). Lower scores indicate more adaptive parenting strategies.

The parenting stress index-short form<sup>24</sup> is a 36 item questionnaire that assesses parental adjustment across three subscales (parental distress, difficult child, and parent-child dysfunctional interaction). Higher scores indicate greater levels of stress in the parenting role.

**User acceptability**

The treatment acceptability rating scale<sup>25</sup> was used in an adapted form<sup>15</sup> to assess the perceived treatment utility and quality of experience for parents who participated in the peer led parenting groups. The measure obtains ratings of user satisfaction for nine different aspects of treatment (using a four point Likert scale), and also elicits qualitative feedback from three open ended questions.

**Sample size**

The sample size calculation was based on a previous randomised controlled trial<sup>26</sup> carried out in community settings with socially disadvantaged families, in which parent training groups (facilitated by professionals) were compared with a waitlist control condition. An intention to treat analysis showed an

intervention effect size of 0.89 (95% confidence interval 0.54 to 1.24) and a mean difference of 25.1 (95% confidence interval 14.9 to 35.2,  $P<0.001$ ) on the intensity subscale of the Eyberg child behaviour inventory. Taking the lower bound of this confidence interval as a conservative estimate of effectiveness, we calculated that 110 families would be needed to detect a significant effect ( $P<0.05$ ) of parent training in the present study.

**Randomisation**

We randomised participants by intervention site in blocks of between 7 and 14, depending on the number of families recruited at a given site. If two adults from the same family wished to attend the programme, we included both in the same unit of randomisation along with the index child. Otherwise the unit of randomisation was the index child-parent pair.

An independent trial technician used computer software to oversee the randomisation procedure. A 1:1 allocation ratio was used so that equal numbers of participants were assigned to the intervention and waitlist control groups. Allocation took place after baseline assessment; blinding of post-intervention assessments was not possible owing to the use of parent reported outcome measures.

**Analysis strategy**

We used an intention to treat strategy—that is, all participants were included in the analysis irrespective of whether they had completed the intervention. For participants who were lost to follow-up we assumed no change from baseline. The results for a per protocol analysis were also calculated. Analysis of covariance was used to test differences between intervention and waitlist control groups at follow-up, accounting for site as a random effect, intervention as a fixed effect, and baseline score as a covariate. We used Cohen's  $d$  to calculate effect sizes.

## Results

The figure<sup>1</sup> shows the flow of recruited families through the trial. Table 1<sup>1</sup> shows the baseline characteristics of the families, including those lost to follow-up. A large proportion of parents identified themselves as being from black and ethnic minority groups (n=82; 71%), double the proportion of residents from black and ethnic minority groups in Southwark as a whole.<sup>27</sup> The study participants were also more economically disadvantaged than the general population of Southwark across a range of indices, including income and housing status.<sup>28</sup>

## Uptake of intervention

Fifty four parents (92%) completed the parenting intervention, defined as attendance at five or more (out of a total of eight) weekly sessions. Those completing the intervention attended a mean 7.10 (SD 0.92) sessions. Among the five non-completers, two did not attend any sessions, one attended one session, one attended two sessions, and one attended four sessions. Reasons for non-attendance were new employment (n=1), travel overseas to care for a relative (n=1), lack of readiness to engage (n=1), and unknown (n=2).

## Main findings

The intervention group showed significant improvements on all outcome measures after treatment ( $P<0.01$  or  $P<0.001$ ). In contrast, no outcome measure changed significantly within the control group. This pattern extended to levels of caseness within the respective groups (table 2<sup>1</sup>).

Intention to treat analyses of differences between the groups showed significant advantages for the intervention group over control group on the intensity and problems subscales of the Eyberg child behaviour inventory ( $P=0.01$  and  $P=0.001$ ) and concerns about my child ( $P<0.001$ ), with medium to large effect sizes of between 0.38 and 0.77 on these measures of child behaviour problems (table 3<sup>1</sup>). The groups did not differ significantly on overall child mental health functioning (strengths and difficulties questionnaire total score) or on any of the individual subscales of the strengths and difficulties questionnaire. The intervention had a significant, moderately large effect on positive parenting (Arnold-O'Leary parenting scale total score) compared with the control group ( $P<0.001$ ;  $d=0.69$ , table 4<sup>1</sup>). However, parental stress (parenting stress index-short form total score) did not differ significantly between the groups. This pattern of results was replicated in the per protocol analyses (see tables 3 and 4).

Fifty four parents in the intervention group completed the training acceptability rating scale at the end of treatment. High levels of treatment acceptability were reported, with 100% of respondents stating that overall they were satisfied "a great deal" or "quite a lot." Specific aspects of the intervention were also strongly endorsed, with a median acceptability score of 4 (the maximum possible) for every item on the training acceptability rating scale. This included ratings of the perceived competence of the facilitators (mean 3.87, SD 0.34), ability of the facilitators to relate to the group (mean 3.79, SD 0.41), motivational qualities of the facilitators (mean 3.83, SD 0.38), as well as the extent to which the intervention led to increased understanding of positive parenting (mean 3.59, SD 0.53), development of positive parenting skills (mean 3.50, SD 0.64), and confidence in the parenting role (mean 3.44, SD 0.69).

## Discussion

A peer led parenting intervention can significantly reduce behaviour problems in children and improve positive parenting in families characterised by a high degree of socioeconomic disadvantage. Moreover, the low rate of drop out suggests that a peer led approach is an acceptable means of delivering evidence based parenting support to families who may not otherwise engage in mainstream services. Although parental stress significantly decreased in the intervention group, the advantage of treatment over a waitlist control condition on this particular outcome was not significant.

The peer led parenting intervention achieved medium to large effects on both the primary outcome measure (Eyberg child behaviour inventory-intensity subscale) and secondary outcome measures of child behaviour problems and parenting competencies. Effect sizes compared favourably with results from clinical trials in which parenting interventions were delivered in a conventional professional led format.<sup>6 26</sup> Previous trials<sup>29 30</sup> have also tended to report relatively larger intervention effects on child behaviour outcomes compared with parental adjustment, as was the case in the present study. It is therefore likely that our trial was underpowered to detect a significant advantage for the intervention over the control group in reducing parental stress.

In terms of engagement outcomes, the intervention had an impressively high retention rate of 92%. This finding is particularly notable given the sociodemographic profile of the participating parents, which would typically be associated with multiple barriers to service use.<sup>8 9 10</sup> In comparison, retention rates of 75%<sup>21</sup> and 85%<sup>26</sup> have been reported in two other UK trials of professional led parenting programmes for socially disadvantaged families. This suggests that the current peer led parenting intervention has the potential to outperform conventional parenting group formats, even those specifically targeted at hard to reach populations, in successfully engaging parents in treatment for their children's behaviour problems.

## Strengths and limitations of the study

The present study is a novel evaluation of the effectiveness of a peer led parenting intervention, delivered in a socially deprived inner city area of the United Kingdom. The trial was carried out in community settings as a part of the routine provision of the empowering parents, empowering communities programme, which strengthens the external validity of findings and generalisability to conditions in the real world. Randomisation and allocation concealment were employed to minimise selection bias and maximise internal validity. However, we cannot rule out the possibility of measurement bias due to unblinded follow-up assessments, or shared method bias owing to assessment based entirely on parental self report measures. Future research should employ independent observations of interactions between parent and child, or reports from other key informants such as teachers. As yet, follow-up data to determine the longer term effects of the empowering parents, empowering communities programme are lacking, although the results suggest that such research may be warranted.

## Meanings and implications of the study

This study has shown that a peer led parenting intervention can provide accessible and effective treatment for disruptive behaviour problems in children from some of the most vulnerable families in society. The results are of particular interest in the current sociopolitical climate, where services are subject to intense budgetary pressures and there is urgent need



for innovative, cost effective delivery models. Although formal economic evaluations have yet to be completed, the intervention may offer an economically viable method for increasing provision of evidence based parenting support for families who are hard to reach.

## Questions and future research

Our findings require replication for children with different levels of problem severity, in comparison with other active treatments, such as treatment as usual or another standardised parenting programme, and in longer term follow-up studies. In addition, future studies should collect more comprehensive information on the baseline characteristics of participating families, such as the mental health status of parents, to examine the variation in treatment response across different sociodemographic and clinical profiles.

Research is also needed to examine the cost effectiveness of the empowering parents, empowering communities programme, as well as the wider effects of the intervention on social capital and community resources. This would be of importance not only to the further development of the intervention but more broadly to the understanding of peer led approaches and their potential benefits for the health and wellbeing of individuals, families, and communities.

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Contributors: CD was principal investigator, obtained funding, and acts as guarantor for the research. DM and CD designed the study. ST carried out consent and randomisation procedures; collected, managed, and analysed data; and wrote the first draft of the paper under the supervision of DM. DM and CD critically revised the manuscript. CP and LD advised on the manuscript, authored the intervention manual, and supervised the peer facilitators.

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Competing interests: All authors have completed the ICMJE uniform disclosure form at [www.icmje.org/coi\\_disclosure.pdf](http://www.icmje.org/coi_disclosure.pdf) (available on request from the corresponding author) and declare that: all authors have support from the Institute of Psychiatry, King's College London for the submitted work; all authors have no relationships with any organisations that might have an interest in the submitted work in the previous three years; and all authors have no non-financial interests that may be relevant to the submitted work.

Ethical approval. This study was approved by the National Health Service National Research Ethics Service (South West 2 research ethics committee).

Data sharing: No additional data available.

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**What is already known on this topic**

Parenting interventions are recommended for the treatment of disruptive behaviour problems in children aged up to 12 years

However, standard parenting interventions, as delivered by professionals in mainstream services, are often inaccessible to the most vulnerable families

**What this study adds**

A peer led parenting intervention can significantly reduce behaviour problems in children and improve positive parenting in socioeconomically disadvantaged families

The <10% dropout rate suggests that a peer led group format is an acceptable method for delivering evidence based parenting support to families who may not otherwise engage in mainstream services

## Tables

**Table 1| Sample characteristics of index children and parental caregivers. Values are numbers (percentages) unless stated otherwise**

Characteristics	Followed-up		Lost to follow-up		Total sample (n=116)
	Control (n=50)	Intervention (n=54)	Control (n=7)	Intervention (n=5)	
Boys	34 (68)	32 (59)	2 (29)	1 (20)	69 (59)
Mean (SD) age of child (years)	4.82 (2.35)	4.70 (2.47)	5.00 (2.71)	5.80 (3.77)	4.81 (2.46)
Biological mothers	48 (96)	51 (94)	7 (100)	5 (100)	111 (96)
Mean (SD) age of parent (years)	35.82 (7.76)	37.02 (7.60)	33.00 (4.08)	33.40 (4.93)	36.10 (7.44)
Parent from black and ethnic minority group	38 (76)	37 (69)	5 (71)	2 (40)	82 (71)
Disposable weekly household income <£200*	34 (68)	36 (67)	5 (71)	3 (50)	78 (67)
Housing status:					
Rent from local authority	19 (38)	19 (35)	2 (29)	2 (40)	42 (36)
Rent privately	13 (26)	14 (26)	3 (43)	1 (20)	31 (27)
Rent from housing association	8 (16)	4 (7)	1 (14)	—	13 (11)
Owner occupiers	2 (4)	12 (22)	1 (14)	—	15 (13)
Other/missing	8 (16)	5 (9)	—	2 (40)	15 (13)

\*Corresponds to lowest 20% of national population.

**Table 2| Frequency (%) of families meeting clinical caseness criteria on child and parenting outcome measures**

Measure	Control group			Intervention group		
	No*	Baseline	Follow-up†	No*	Baseline	Follow-up†
Eyberg child behaviour inventory:						
Intensity subscale (clinical range $\geq 127$ )	57	17 (30)	18 (32)	58	24 (41)	11 (19)
Problems subscale (clinical range $\geq 11$ )	52	25 (48)	21 (40)	54	24 (44)	9 (17)
Strengths and difficulties questionnaire:						
Total (abnormal/borderline range $\geq 14$ )	47	14 (30)	16 (34)	45	17 (38)	10 (22)
Conduct (abnormal/borderline range $\geq 3$ )	47	17 (36)	17 (36)	46	22 (48)	15 (33)
Hyperactivity/inattention (abnormal/borderline range $\geq 6$ )	47	16 (34)	12 (26)	45	14 (31)	11 (24)
Parenting scale (clinical range $\geq 3.1$ )	56	31 (55)	36 (64)	59	39 (66)	23 (39)
Parenting stress index-short form (clinical range $\geq 90$ )	57	19 (33)	19 (33)	59	31 (53)	14 (24)

\*Variation in number is due to failure of some participants to complete all questionnaires during data collection meetings; number is lowest for strengths and difficulties questionnaire because scores for 2 year olds were excluded (measure is valid for children aged 3 years and over).

†When follow-up score was missing, baseline measurement was carried forward as per intention to treat analysis.



Table 3| Child outcomes. Values are mean (standard deviation) raw scores unless stated otherwise

	Control			Intervention			Intention to treat analysis*		Per protocol analysis†	
	No‡	Baseline	Follow-up	No‡	Baseline	Follow-up	Estimated mean difference (95% CI)§, P value	Effect size (95% CI)	Estimated mean difference§ (95% CI), P value	Effect size (95% CI)
Eyberg child behaviour inventory:										
Intensity subscale	57	111.81 (34.41)	109.26 (28.87)	58	119.29 (34.05)	102.59 (26.41)	−10.57 (−18.56 to −2.59), 0.01	0.38 (0.01 to 0.75)	−10.55 (−19.44 to −1.67), <0.05	0.37 (−0.02 to 0.76)
Problems subscale	52	10.27 (7.66)	8.87 (7.96)	54	11.30 (8.80)	5.37 (6.30)	−4.04 (−6.40 to −1.67), 0.001	0.56 (0.17 to 0.95)	−4.13 (−6.56 to −1.69), 0.001	0.57 (0.17 to 0.97)
Concerns about my child measure	50	53.56 (27.59)	49.63 (32.78)	54	52.38 (31.76)	26.25 (27.09)	−23.01 (−33.06 to −12.96), <0.001	0.77 (0.36 to 1.16)	−24.57 (−35.15 to −13.99), <0.001	0.85 (0.42 to 1.26)
Strengths and difficulties questionnaire:										
Total score	47	11.02 (5.77)	10.45 (5.54)	45	12.96 (6.95)	10.09 (5.89)	−1.67 (−3.50 to 0.17), 0.07	0.29 (−0.12 to 0.70)	−1.60 (−3.63 to 0.42), 0.12	0.28 (−0.16 to 0.71)
Conduct subscale	47	2.19 (1.84)	2.06 (1.69)	46	2.89 (2.21)	2.17 (1.76)	−0.22 (−0.85 to 0.41), 0.49	0.13 (−0.28 to 0.53)	−0.22 (−0.92 to 0.48), 0.53	0.12 (−0.31 to 0.55)
Hyperactivity/inattention subscale	47	4.45 (2.59)	4.38 (2.54)	45	4.38 (2.40)	3.71 (2.16)	−0.70 (−1.41 to 0.003), 0.05	0.30 (−0.12 to 0.70)	−0.72 (−1.49 to 0.05), 0.07	0.31 (−0.13 to 0.74)

\*Based on group number at baseline on all outcome measures.

†Group numbers varied for measures: Eyberg child behaviour inventory (both subscales), control group n=49, intervention group n=53; strengths and difficulties questionnaire (total and hyperactivity/inattention), control group n=41, intervention group n=42; strengths and difficulties questionnaire (conduct), control group n=41, intervention group n=43; concerns about my child, control group n=45, intervention group n=52.

‡Numbers reflect missing completion of some questionnaires by participants.

§Based on analysis of covariance, adjusted for baseline score and site.

**Table 4| Parenting outcomes. Values are mean (standard deviation) raw scores unless stated otherwise**

Measures	No‡	Control group		No	Intervention group		Intention to treat analysis*		Per protocol analysis†	
		Baseline	Follow-up		Baseline	Follow-up	Estimated mean difference (95% CI)§, P value	Effect size (95% CI)	Estimated mean difference§ (95% CI), P value	Effect size (95% CI)
Parenting scale	56	3.23 (0.56)	3.26 (0.65)	59	3.34 (0.57)	2.90 (0.62)	−0.44 (−0.63 to −0.26), <0.001	0.69 (0.31 to 1.06)	−0.49 (−0.69 to −0.29), <0.001	0.80 (0.40 to 1.20)
Parenting stress index-short form	57	85.60 (21.65)	80.86 (18.62)	59	87.88 (22.35)	77.71 (20.77)	−4.38 (−10.52 to 1.77), 0.16	0.22 (−0.15 to 0.58)	−4.70 (−11.45 to 2.05), 0.17	0.24 (−0.15 to 0.63)

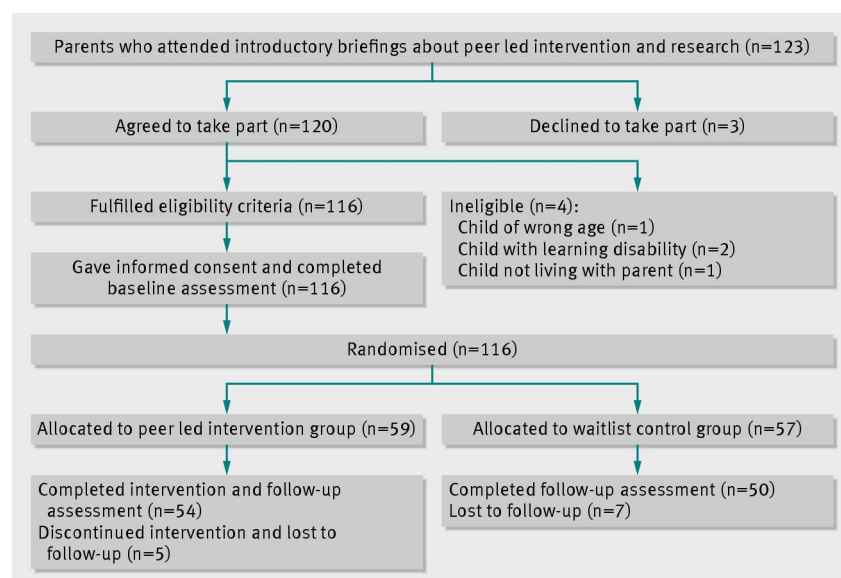
\*Based on group number at baseline on all outcome measures.

†Group numbers varied for measures: parenting scale, control group n=50, intervention group n=54; parenting stress index-short form, control group n=48, intervention group n=54.

‡Numbers reflect missing completion of some questionnaires by participants.

§Based on analysis of covariance, adjusted for baseline score and site.

## Figure



Flow of families through trial